Primrose, Annette

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Subject: SPP decision rules

Below is a draft version of decision rules that we are considering for the SPP project:

Approval of Final Solar Ponds Plume Decision Document

Final approval of this decision document will require the inclusion of specific rules to guide future decisions regarding treatment system performance monitoring, groundwater monitoring, and surface water quality monitoring. These decision rules can be added to the document or will be included in an approval letter. Monitoring required to support these decision rules will be incorporated into the IMP.

I. To gauge the performance of the treatment system, access points have been designed to allow monitoring of system influent and effluent. The decision document anticipates that the reactive media will have to be replaced periodically in order to meet project objectives. Based on bench-scale test results, effluent levels must be identified which indicate that the system will no longer be able to maintain treatment capability sufficient to meet surface water standards in the stream. In addition, influent levels which indicate that continued treatment is no longer required must also be identified. The decision rules associated with media replacement are:

IF: quarterly measured effluent levels exceed ___ mg/L nitrate or ___ pCi/L total uranium,

THEN: monthly effluent sampling will be required, AND

IF: three successive monthly measurements exceed ___ mg/L nitrate or ___pCi/l total uranium,

THEN: replacement of the reactive media is required, OR

IF: three successive monthly measurements are below ___ mg/L nitrate or ___ pCi/L total uranium,

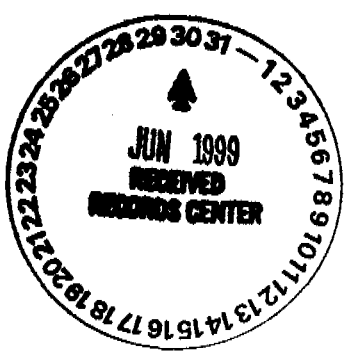
THEN: sampling frequency will revert to a quarterly schedule.

The decision rule associated with decommissioning of the SPP treatment system is:

IF: stream standards are being met at a downstream POE and four successive quarterly measured influent levels are below ___ mg/L nitrate or ___ pCi/L total uranium,

THEN: an analysis will be required which accounts for potential sources of nitrate and uranium loading to North Walnut Creek, AND

IF: this evaluation indicates that stream standards for nitrate and uranium can be met with untreated plume waters reaching the stream,



THEN: treatment can be discontinued and the system decommissioned.

II. In order to measure the effects of the Solar Ponds Plume treatment system on contaminant concentrations in surface water, a POE will be established downstream of where the plume intersects the North Walnut Creek stream channel. Should the point of intersection change over time, the location of the POE will be adjusted. If appropriately located, an existing monitoring station can be used. Decision rules associated with this POE are:

IF: levels of nitrate or uranium (or any other pollutants determined to be in the plume at a level that could cause a violation of stream standards) at the POE are measured at or above water quality standards (temporary modifications apply to the nitrate standard through 2009),

THEN: as prescribed in ALF, an investigation will be done to determine the likely cause(s) of the high levels and to develop appropriate remedial actions. The investigation will include, at a minimum, consideration of each the following factors as a possible cause for the high levels measured at the POE:

1) SPP flow that might be bypassing the SPP groundwater collection/treatment system,

2) the need for replacement of groundwater treatment media,

3) insufficient groundwater treatment capability.

III. Groundwater monitoring - [It is assumed that the intended purpose of the proposed well cluster north of the barrier system is to measure underflow along the model transect. These measurements will be used to confirm estimates of contaminant flux bypassing the barrier. Preliminary estimates of contaminant flux below the SPP treatment system are 1.4 mg/yr based on 850 liters per year per foot of trench (850 feet long) with a concentration of 200 mg/l and an assumed K of 0.05ft/d in the weathered bedrock and a 5 sq ft cross section. Decision rules for these wells, based on impacts to stream loading created by this flux amount, must be proposed].

CDPHE requests a briefing on the results of the recent geotechnical borings. CDPHE also requests the data from the reactive media bench scale testing including the anticipated flow rates and retention times and the resulting media volumes.

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